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10/781,985	02/20/2004	Uri Mahlab	MAHLAB8	5729

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EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/781,985	MAHLAB ET AL.	
	Examiner	Art Unit	
	David S. Kim	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Applicant's response to the objections to claims 2 and 5 in the previous Office Action (mailed on 21 December 2006) is noted and appreciated. Applicant responded by amending claims 2 and 5. Applicant's response overcomes the previous objections, which are presently withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Applicant's response to the rejection of claims 2 and 4-13, under 35 USC 112, first paragraph, in the previous Office Action (mailed on 21 December 2006) is noted and appreciated. Applicant responded by amending the parent claim (claim 1) of claims 2 and 4-13 so that the step of measuring chirp comprises measuring a second derivative of phase of an optical signal with respect to time. However, this amendment only serves to further provide a mathematical definition of chirp. It does not provide any teachings to practically enable one to perform this measurement. Accordingly, **claims 1-2 and 4-17** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In another perspective, if Applicant considers this mathematical definition to be self-enabling, then Applicant is encouraged to simply state so. However, if Applicant states so, then Examiner may use such a statement in a rejection under 35 USC 102 or 103 if Examiner applies prior art that teaches this mathematical definition.

4. Applicant's response to the rejection of claims 1, 3, 14, and 16, under 35 USC 112, second paragraph, in the previous Office Action (mailed on 21 December 2006) is noted and appreciated. Applicant responded by amending the claims to recite method steps. Applicant's response overcomes the previous rejection, which is presently withdrawn.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Kawasaki et al.

6. **Claims 1 and 16** are rejected under 35 U.S.C. 102(b) as being anticipated by Kawasaki et al. (EP 0 944 191 A1, hereinafter "Kawasaki").

Regarding claim 1, Kawasaki discloses:

A method of traffic management in an optical network, comprising

a step of measuring chirp (chirp measurements of Fig. 17 employed in controlling bias voltage of transmitter, paragraph [0108]) of one or more optical signals passing along one or more optical channels in an optical path extending in said network (path of the signal in the transmitter is a path where an optical signal passes along an optical channel), and

a step of making a decision about performing traffic management operations, based on a result of the measurement (chirp measurements of Fig. 17 employed in controlling bias voltage of transmitter, paragraph [0108], for the purpose of minimizing bit error in paragraph [0107]),

wherein the step of measuring chirp comprises measuring a second derivative of phase of at least one of said optical signals in at least one of said optical channels with respect to time (second derivative in paragraph [0035]).

Regarding claim 16, Kawasaki discloses:

A system capable of performing the method for traffic management in an optical network according to the method of claim 1, the system comprising:

at least one optical path (e.g., 6 in Fig. 1);

at least one node (e.g., 2 or 4 in Fig. 1); and

at least one measuring unit (e.g., 14 in 4 in Fig. 1).

Inui et al.

7. **Claims 1 and 16** are rejected under 35 U.S.C. 102(e) as being anticipated by Inui et al. (U.S. Patent No. 6,958,467 B2, hereinafter "Inui") with reference to Kawasaki.

Regarding claim 1, Inui discloses:

A method of traffic management in an optical network, comprising

a step of measuring chirp (e.g., Fig. 15, col. 12, l. 30-37) of one or more optical signals passing along one or more optical channels in an optical path extending in said network (e.g., path 10 in Fig. 15), and

a step of making a decision about performing traffic management operations, based on a result of the measurement (col. 12, l. 31-37),

wherein the step of measuring chirp comprises measuring a second derivative of phase of at least one of said optical signals in at least one of said optical channels with respect to time (Kawasaki does show that one may characterize chirp according to such a second derivative (Kawasaki, second derivative in paragraph [0035])).

Regarding claim 16, Inui discloses:

A system capable of performing the method for traffic management in an optical network according to the method of claim 1, the system comprising:

at least one optical path (e.g., 10 in Fig. 15);

at least one node (e.g., repeater and regenerator in col. 1, l. 10-15); and

at least one measuring unit (e.g., 20 in Fig. 1).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Kawasaki et al.

10. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki.

Regarding claim 14, Kawasaki does not expressly disclose:

The method according to claim 1, wherein said step of measuring chirp measures chirp of one or more optical signals passing along at least two of said one or more optical channels of the optical path.

However, it is conventional practice to employ multiple optical channels for an optical path. A common example of such a practice is wavelength division multiplex (WDM) systems. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ two or more channels as in a WDM system. One of ordinary skill in the art would have been motivated to do this for the conventional motivation of increased transmission capacity. That is, WDM provides more optical channels per optical path. Applied to the method of Kawasaki, it follows that the method of Kawasaki would be applied to each channel so that it is performed at two or more channels of the optical path.

11. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki as applied to the claims above, and further in view of Ramaswami et al. (*Optical Networks: A Practical Perspective, 2nd ed.*, hereinafter "Ramaswami").

Regarding claim 17, Kawasaki does not expressly disclose:

The method according to claim 1, wherein the traffic management operations include one or more of operations selected from the following non-exhaustive list:

reducing bit rate of at least one of said optical channels;

rerouting at least one of said optical channels;

reducing a number of optical channels in the optical path;

transmitting information, previously carried at a specified wavelength, via a vacant optical channel of the same optical path at a different wavelength.

However, notice that Kawasaki is concerned about the effect of chromatic dispersion (abstract). It is known in the art that dispersion presents limitations on systems, as shown by Ramaswami (p. 71-72, bridging paragraph). One of these limitations is a tradeoff between distance and bit rate. Transmission length decreases with higher bit rate and vice versa. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to incorporate the system limitations due to chromatic dispersion by at least reducing the bit rate of at least one of the optical channels of Kawasaki. One of ordinary skill in the art would have been motivated to do this in the case that one desires to increase transmission length (Ramaswami, p. 71-72, bridging paragraph).

Inui et al.

12. **Claims 14-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Inui.

Regarding claim 14, Inui does not expressly disclose:

The method according to claim 1, wherein said step of measuring chirp measures chirp of one or more optical signals passing along at least two of said one or more optical channels of the optical path.

However, it is conventional practice to employ multiple optical channels for an optical path. A common example of such a practice is wavelength division multiplex (WDM) systems. At the time the

invention was made, it would have been obvious to one of ordinary skill in the art to employ two or more channels as in a WDM system. One of ordinary skill in the art would have been motivated to do this for the conventional motivation of increased transmission capacity. That is, WDM provides more optical channels per optical path. Applied to the method of Inui, it follows that the method of Inui would be applied to each channel so that it is performed at two or more channels of the optical path.

Regarding claim 15, Inui does not expressly disclose:

The method according to claim 1, comprising performing thereof at a plurality of monitoring points in the optical network, thereby ensuring monitoring of non-linearity effects at sections of the network formed between the monitoring points, and performing various traffic management operations for reducing the non-linearity effects at suitable sections of the network.

However, Inui does suggest such steps by referring to the usage of its teachings in a repeater and regenerator (col. 1, l. 10-15). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ these steps in more than just one repeater and regenerator. One of ordinary skill in the art would have been motivated to do this since multiple repeaters and regenerators are generally employed in an optical communication system to compensate for various transmission parameters along the transmission link. As non-linearity effects generally accumulate between repeaters and regenerators, it follows that one would apply the compensation means at more than one repeater or regenerator to compensate for these instances of accumulation.

13. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Inui as applied to the claims above, and further in view of Ramaswami.

Regarding claim 17, Inui does not expressly disclose:

The method according to claim 1, wherein the traffic management operations include one or more of operations selected from the following non-exhaustive list:

reducing bit rate of at least one of said optical channels;

rerouting at least one of said optical channels;

reducing a number of optical channels in the optical path;

transmitting information, previously carried at a specified wavelength, via a vacant optical channel of the same optical path at a different wavelength.

However, notice that Inui is concerned about the effect of chromatic dispersion (col. 1, l. 11-18). It is known in the art that dispersion presents limitations on systems, as shown by Ramaswami (p. 71-72, bridging paragraph). One of these limitations is a tradeoff between distance and bit rate. Transmission length decreases with higher bit rate and vice versa. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to incorporate the system limitations due to chromatic dispersion by at least reducing the bit rate of at least one of the optical channels of Inui. One of ordinary skill in the art would have been motivated to do this in the case that one desires to increase transmission length (Ramaswami, p. 71-72, bridging paragraph).

Response to Arguments

14. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. Applicant presents two salient points.

Regarding the first point, Applicant states:

> "Neither Kawasaki nor Inui describe or claim a method comprising measuring chirp of an optical signal passing via an optical path and, based on a result of the measurement, making a decision about performing traffic management operations.
>
> Indeed, the chirp measured in the amended claim 1 is now clearly understood as the chirp characterizing the optical path in the network where optical signals pass, while the Kawasaki reference relates to the chirp characterizing a laser transmitter (Kawasaki's Fig. 17 [0108]).
>
> Kawasaki utilizes measurements of the chirp for physically controlling the laser transmitter (Kawasaki's [0108]), i.e., for adjusting physical features of the transmitter and the transmission line to reduce the bit error rate, while the present invention utilizes measurement of the chirp for traffic management, i.e., for performing traffic management operations having nothing in common with effecting any physical parameters of lasers" (REMARKS, p. 7, 2nd to 4th paragraphs).

Examiner respectfully notes that the path of the optical signal the transmitter of Kawasaki does constitute an optical path where an optical signal passes. Moreover, the physical parameter of the laser does affect the traffic. That is, bit error rate is a traffic parameter, and Kawasaki's adjustment of the chirp parameter results in reducing the bit error rate in paragraph [0107]. Therefore, Kawasaki's adjustment does constitute a traffic management operation. Accordingly, Applicant's first point is not persuasive.

Regarding the second point, Applicant states:

> "Inui (col. 12, lines 30-37; Fig. 15) proposes measuring chirp of an optical signal upon passing via an optical line. The chirp measurement result is used for controlling a tunable dispersion equalizer 40, i.e., also for adjusting physical properties of the optical line/network. Similarly, Inui's Fig. 1 illustrates a method of adjusting/calibrating transmitters using chirp measurement.
>
> Any of the cited references, upon measuring one or another type of chirp, deals with adjusting physical parameter(s) at a specific point of the optical line, and none of them gives a generalized, "network" solution for overcoming any non-desired effects desired effects detected by measuring the chirp. In other words, neither of the cited references proposes undertaking any organizational measures with traffic (optical signals) passing via optical network, i.e., none of them describe or suggest any traffic management operations as a result of measuring chirp in an optical path of an optical network" (REMARKS, p. 7, 5th and 6th paragraphs).

Examiner respectfully notes that the physical properties of the optical line/network do affect the traffic. Inui's dispersion compensation results in less dispersion, which would result in the reception of cleaner signals, which would result in lower bit error rates and signal-to-noise ratios. That is, bit error rates and signal-to-noise ratios are traffic parameters. Therefore, Inui's dispersion compensation adjustment would constitute a traffic management operation. Accordingly, Applicant's second point is not persuasive.

Summarily, Applicant's arguments are not persuasive. Accordingly, Examiner respectfully maintains the standing rejections.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER